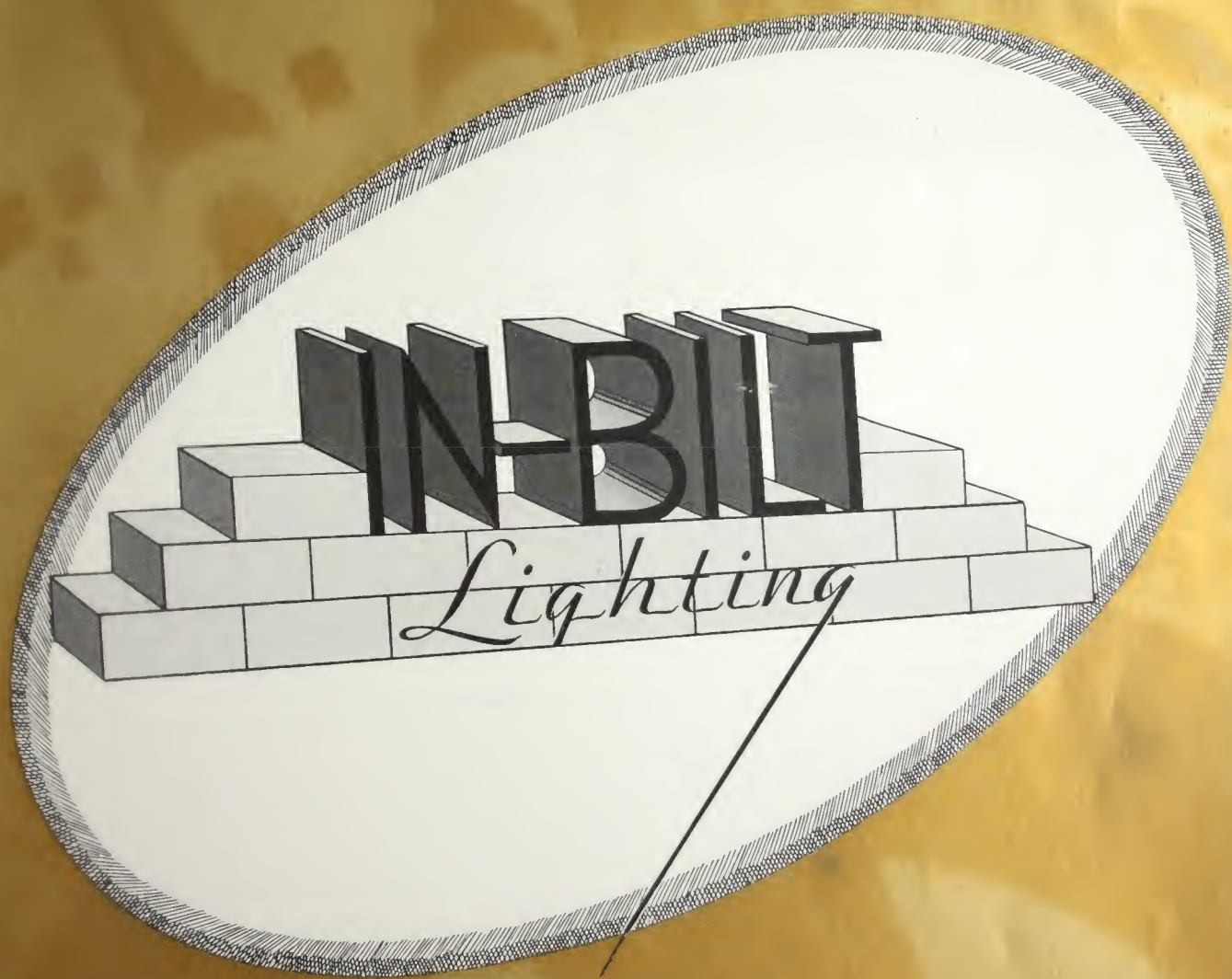




HOLOPHANE

**INBILT
LIGHTING**

IN-BILT LIGHTING
OUT- *Modes all others*



HOLOPHANE COMPANY, Inc.

342 Madison Avenue, New York TORONTO, CANADA Works: NEWARK, OHIO

An Introduction to

HOLOPHANE

IN-BILT Lighting



Sun light pours through your window. The glare disturbs you, and so, you lower the shade. By this simple action, you have somewhat controlled the general illumination of your room and excluded glare.

But you have been unable to control the direction of your light. For instance, you could not have concentrated the light on your desk, without moving the desk.

This example roughly illustrates an old problem in artificial lighting—that is, to provide efficient general illumination by a system that also permits a planned concentration of light at specific points.

That problem exists no longer. It has been solved with the advent of Holophane IN-BILT lighting, which uses the Holophane "Controlens" as its functional unit. The "Controlens" is a modern, logical departure from the traditional lighting fixture, which has been held over from the era of gas and oil lighting. It is a built-in, structural element of an interior, exactly as in the case of windows or dormers. Its construction varies to meet particular needs. It is built-in, in ceilings or walls, in any desired pattern or grouping, and is equally practical for old as well as new buildings.

A Holophane IN-BILT installation floods a room with controlled, glareless light, while from the same source, light is focused with minute precision at strategic points—the department store show case—the school blackboard—the machine unit in a manufacturing plant.

It is the synchronized control of general illumination and direction of light from a single source, that is the triumph of IN-BILT lighting. It vastly extends the scope of modern lighting, by offering architects and engineers, a flexible, practical, proven method for transforming their ideas and inspirations, into tangible achievement. IN-BILT lighting is the outcome of 35 years of specialized study and manufacture of lighting equipment by the Holophane Company—an organization well able to handle lighting projects of any magnitude, anywhere in the United States.

Examples on the following pages, demonstrate the flexibility in IN-BILT lighting, and its adaptability to specific needs, on any scale, for both concealed and exposed lighting.

The architect clearly intended that no element distract the eye from the majestic murals, which adorn the walls in this circular lobby of the National Broadcasting Company. Hence, the absence of decorative accessories or furniture. There are no visible lighting fixtures. The visitor naturally finds his attention directed solely to the murals. In the luminous atmosphere, he is scarcely aware that light is definitely concentrated on the murals, from the concealed Holophane "Controlens" overhead. "Controlens" (prismatic lenses), the master principle of IN-BILT lighting, throw light on the walls from a multitude of glass prisms, set at pre-determined angles. The desired volume of general and local illumination was calculated in advance, and produced with mathematical accuracy.

Whether the subject at hand be murals, merchandise or machinery, the Holophane system of IN-BILT lighting places emphasis on the object to be seen, in direct proportion to its importance . . . and not on the source of its illumination.





Observe how deftly the architect has utilized the Holo-phane "Controlens" as integral elements in the decorative ceiling of this interior—the chambers of the Ohio State Senate. The light travels a distance of twenty-nine feet from the ceiling. No other source of illumination is required. Every senator may peruse his particular bill without the slightest eye strain. Holo-phane quadruple IN-BILT units, with 150-watts behind each "Controlens" provide a glareless, uniform, efficient light.

AT LEFT. A jewelry store, which illustrates how simply and effectively a conventional interior can be subtly modernized. Here, Holo-phane "Controlens" have been recessed flush with the ceiling. They provide a light of glareless brilliance, which jewelry shops require. The units establish a modern note, accomplished with no disturbance of the structural elements of the store.



A view of the Chapel of St. Elizabeth's College. A pair of powerful 500-watt "Controlens" units in the ceiling direct a flood of soft light to the altar and the adjoining murals. Hidden from view in the pilasters are Holophane double-lens units, which further illuminate the altar. Also in the pilasters, out of sight and set at 45° angles, are additional units to augment the general illumination of the chapel. Holophane IN-BILT lighting here demonstrates once again its unique flexibility for the creation of appropriate atmosphere plus the provision of practical lighting for specific needs.

BELOW. The sun porch of a private dwelling which reveals that Holophane "Controlenses" are also at home—in the home. The special ceiling unit is embellished for decorative effect. The side wall units direct all their light to the ceiling and help to illuminate pleasantly the entire room.





IN addition to general illumination, Holophane IN-BILT Lighting solves a dual problem in the Control Room of the National Broadcasting Company, pictured above. The meters on the switch board and control panels are lighted by 12 recessed Holophane Controlens units, which are spaced on five-foot centers, eighteen inches out from the face of the boards. The meters are easily read, because the reflection from the glass meter faces is directed to the floor, out of the line of vision. On the ceiling, 21 recessed "Controlens," with 150-watt lamps in each, solved the knotty problem of illuminating both the vertical and horizontal surfaces of the motors. The control room is 29 feet wide, 52 feet long, 8 feet high.

Center: An olive inspection department, where "little ones" are separated from the "big ones." Note the rejected fruit on the moving belt nearest the inspectors. A Holophane system provides the pure, glareless light which is essential to insure accuracy in the grading process, and to prevent eye fatigue.

At Right: Effective lighting by Holophane makes this service station an attractive, economical advertisement for the Union Oil Company. The lighting projects solved by Holophane are as varied as industry itself!





A vast interior of auditorium dimensions . . . a compact filing room . . . the quotation board of a stock exchange! Scientific illumination is equally essential for all three, yet each requires individual treatment. The problem of the New York Cotton Exchange (top left) called for general lighting. The quotation board of the San Francisco Stock Exchange (below) required restricted lighting. The music library of the National Broadcasting Company (center) necessitated concentrated but glareless lighting. All three requirements were met by IN-BILT lighting. The Holophane system controls distribution; and direction of light, diverts the light from non-useful to useful directions; prevents light from streaming out at wasteful upward or downward angles; glare is entirely avoided. Whatever the specifications call for, there is a Holophane "specific" to meet them with accuracy—at lowest cost.





ABOVE: MAIN FLOOR, G. FOX AND SONS, SAN FRANCISCO



TOP: WALLACH BROS., EMPIRE STATE BUILDING, NEW YORK CITY

BELOW: PAULSON'S, SAN FRANCISCO

First . . . light the merchandise! That is the cardinal rule of retail store lighting of today. It is the principle of window display lighting, brought into the store's interior. Light should fall on merchandise first, and then be reflected to the traffic areas and store generally. Light should sell merchandise—not compete with it. Avoid conspicuous fixtures which attract attention to themselves, rather than to the goods.

Holophane engineers have planned and installed IN-BILT lighting systems which are helping to sell goods in retail stores from coast to coast. Counters, show cases, wall cabinets,



PANY, HARTFORD, CONNECTICUT

are bathed in radiant light . . . irresistibly attracting the eye . . . inviting inspection . . . stimulating the urge to buy. Planned lighting with Holophane IN-BILT equipment insures not only the desired concentration of light on merchandise, but also an ample diffusion of glareless light, throughout the store. Traffic areas, stair cases, elevator entrances are properly illuminated from local or general sources, or both. The illustrations show use of recessed, flush and exposed Holophane "Controlens" units. The company's staff is at your service, for modernizing a single department . . . or an entire store.



TOP: WALLACH BROS., FIFTH AVENUE
AT FORTY-FIFTH, NEW YORK CITY

BELOW: WOODWARD AND LOTHROP
WASHINGTON, D. C. (Escalator)




Holophane IN-BILT lighting illuminates this wayside stand—within and without. Exterior lighting, which brings the passing motorist to a sudden halt, is provided by a series of prismatic "Controlens" mounted under the eaves, at six foot intervals. The light is of uniform brilliance, but no glare. Operating costs are reduced to a minimum. Holophane "Controlens," flush with the ceiling on nine-foot centers, make the interior gayly inviting, justifying the bright promise of the exterior. The painting behind the counter is lighted with a pair of "Controlens." 100-watt lamps are used in all units. Holophane solves unusual lighting problems with deceptive ease. It is not that the problem is simple, but that Holophane knows the answer!





Here we see a magnificent bar room and restaurant. The bar glistens with alluring lustre; the metal fixtures and polished glasses scintillate and twinkle in the light. The light, of course, is skillfully focused on these vantage points with Holophane recessed "Controls." In the restaurant, patrons respond appreciatively to the snowy gleam of the napery, as it was intended they should! The carefully subdued light issuing from the concealed IN-BILT lighting units is as clear as daylight, yet soft as moon light. The atmosphere is lush, opulent. It exerts that magic spell which brings customers back again—and again.

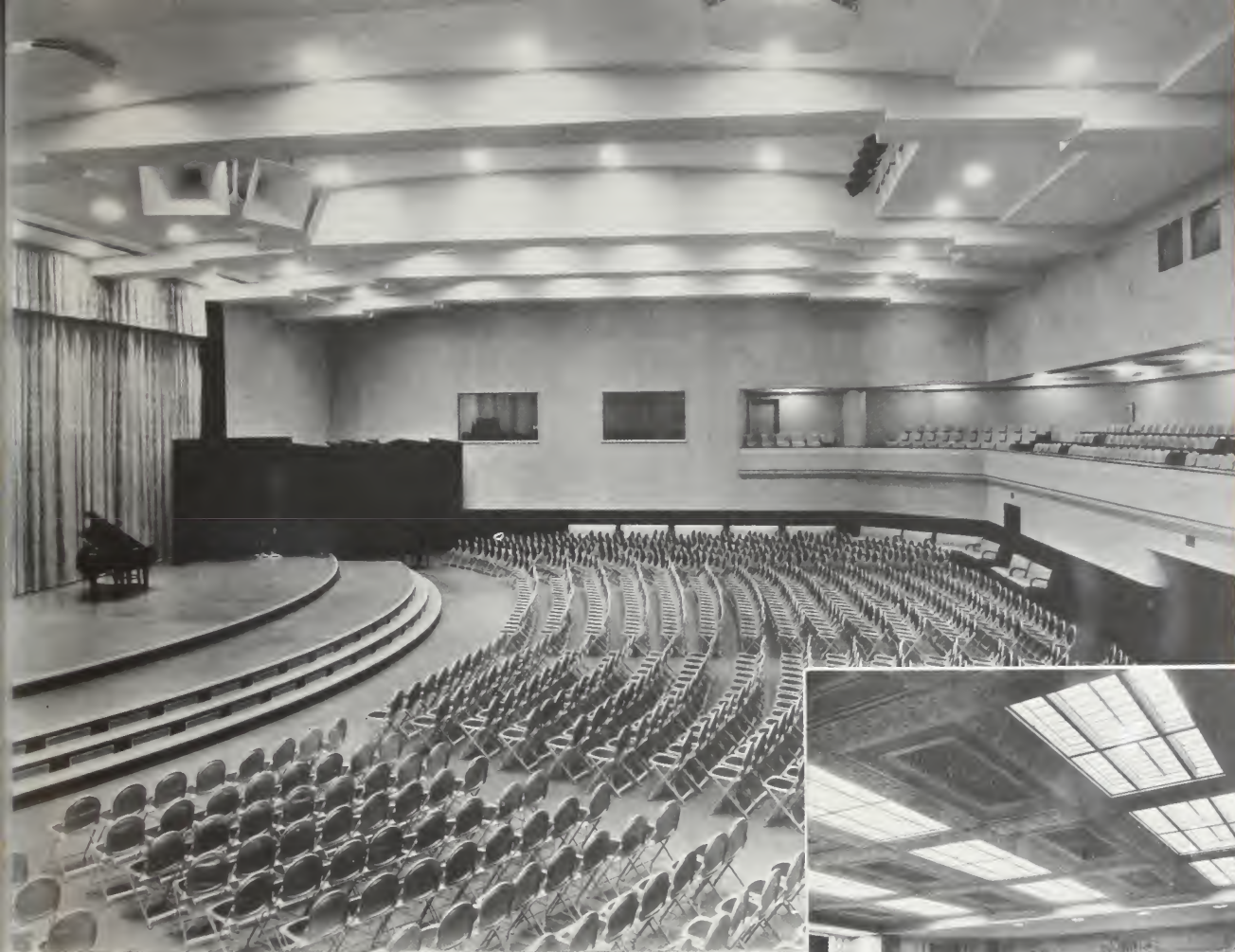




EXTRAORDINARY efficiency of its lighting system is a prime requisite of every hospital. The Holophane Company has designed special, modern equipment for the most simple to the most complex hospital lighting needs. Holophane manipulates light at will with the sensitivity and skill of a surgeon performing a delicate operation. An example is seen in the operating room of the Ophthalmology Institute of the Columbia Medical Center (below). The room is lighted by recessed Holophane "Controlens." The sloping prismatic lenses focus light directly on the table, yet despite the concentrated power of the light, the surgeon works in maximum visual comfort. Those interested, are invited to send for the special Holophane Bulletin, "Hospital Lighting." "Controlens" is but one of a myriad lighting units and equipment designed by Holophane for economical use in hospitals and institutions.

LEFT: A laboratory blackboard in the University of Minnesota. This well-lighted blackboard, equally visible from all parts of the classroom, is a blessing to both students and professors.





The towering shaft of the R.C.A. building shoots straight up into the sunlight. Yet its studios are illuminated entirely by artificial light. Sonic requirements ruled out windows which would admit sound from the outside world. Hanging lighting fixtures were banned because they reflect sound. The heat generated by lighting units was a further complication, inasmuch as excessive heat would interfere with the air conditioning system. Finally, the lighting units had to be in harmony with the rectangular shape of the studios. . . . A combination of Holophane "Controlens" and prismatic reflector was adopted, because it gave the greatest output of light, under sharpest control. Twenty-one studios of the National Broadcasting Company in the R.C.A. building are lighted with Holophane units. Ceiling heights vary from $8\frac{1}{2}$ feet to the 38 foot height of the studio pictured above. The use of Holophane prismatic lenses, with changes of lamp and reflector settings, solved the problem in each studio.

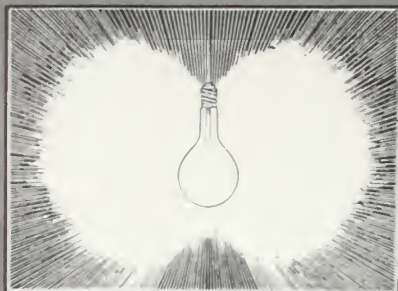
Covering an area of 10,056 square feet, the above pictured studio is lighted with 85 Holophane double IN-BILT units, with two 200-watt lamps in each—3.34 watts per square foot. Rigid engineering requirements of the lighting system made architectural considerations a subordinate factor, but the architectural features of the lighting have nevertheless won highest praise.



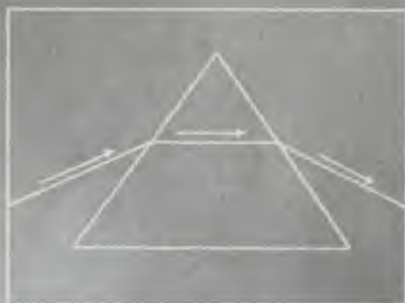
An Auditorium in a Wisconsin High School. The problem of lighting this sizable auditorium was solved completely by an unusual arrangement of Holophane "IN-BILT" lighting on the ceiling. There is a satisfying harmony between the proportions of the ceiling ventilators and the series of lighting units adjoining them. Note, also, that the units are flush with the ventilators, creating a ceiling with an unbroken surface.

CONTROL OF LIGHT

Bare lamps give an uncontrolled and wasteful distribution of light like this:—



The most exact means for controlling direction of light is the glass prism. When a ray of light enters or leaves a glass prism it is bent something like this:—



By varying the shape of the prism and its relative position to the lamp filament, light can be sent in any desired direction. In fact, as shown below:—



—the prism can be made to bend the ray so that it travels directly backward

Whatever You Expect of Light — Holophane IN-BILT Lighting Accomplishes

Your store, your display room, your auditorium, your restaurant or your residence, may present a lighting problem not covered in this booklet. Yet our files must contain many examples of problems, identical to your own, which Holophane IN-BILT lighting has solved. Versatile, flexible, adaptable —IN-BILT light is master of **any** lighting need, regardless of its nature.

To substantiate this statement, let us briefly review the facts.

The glass prism of the Holophane "Controlens" is the basic principle of IN-BILT lighting. Glass is ductile. It can be spun into fragile Venetian glass, or moulded into mammoth observatory lenses. Holophane has utilized the ductility of glass to perfect, and produce on a commercial scale, a glass lens, having optical characteristics. In shape, the lens is either rectangular and flat, or round and slightly convex. But it is always incised with prisms for the controlled refraction and the direction of light.

The "Controlens" can be set in varying relationship to the lamp behind it. That is why it permits utmost accuracy in directing light to a given point. With the light sharply controlled—out of the view —Holophane IN-BILT lighting completely eliminates glare conditions.

Lighting effects can be planned from the architect's blue prints in advance and realized in practice. Holophane IN-BILT lighting, and no other, gives perfect control over the diffusion, intensity and direction of light—simultaneously—from a single source.

In use, the "Controlens" is set in a lens unit which contains one or more lamps. The lens units can be recessed into ceiling or side walls, either flush, or extended beyond the surface. They can be used for concealed, semi-concealed or exposed lighting. In all cases, each lens box becomes a unit of Holophane IN-BILT lighting.

The lens unit, containing the lamps, is virtually dust-proof; practically no dust can gather inside to impair the efficiency of the lens. Dust on the outside of the lens, cannot affect its light directing qualities. "Controlens," too, are made of crystal glass, which alone reflects light in its true color—and which, alone, suffers no permanent depreciation when subjected to heat, fumes, acids, gases, moisture and time. Glass articles have been found perfectly preserved in ancient ruins.

The number of "Controlens" required for a given interior, depends on structural and architectural conditions and to some extent on the intensities required.

IN-BILT lighting is by no means designed only for use in new buildings. In fact, 80% of Holophane installations are replacements of obsolete, wasteful, inefficient lighting systems, discarded in favor of modern lighting. It is entirely practical and economical to modernize old buildings with precisely the same results secured in new constructions.

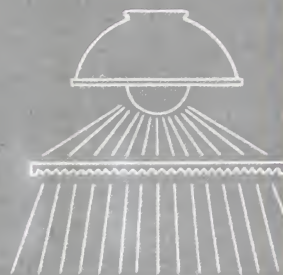
Holophane IN-BILT lighting is modern. It is modern from the architectural and engineering viewpoint. It is modern because it extends the most advanced principles of lighting science over a practically unlimited range of lighting projects. Modern because it is practical. Modern in that it functions with maximum efficiency. It is modern in that it reduces operating costs to a minimum. It is modern because its specialized, flexible application assures greatest economy and permanent satisfaction to every user . . . at a cost which is unexpectedly low.

DISTRIBUTION OF LIGHT



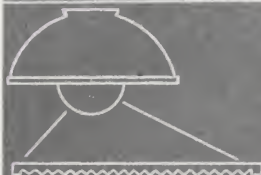
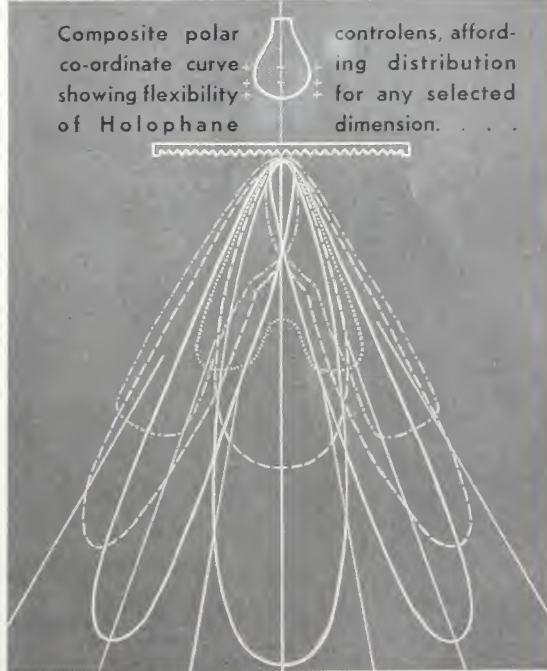
All the light is directed downward, concentrated in a limited area.

The light may be spread to take in a wider area.



Composite polar co-ordinate curve showing flexibility of Holophane

controlens, affording distribution for any selected dimension. . . .



Lamp is to the left of center producing light distribution to the right.

Similarly, lamp to the right of center produces distribution to the left.



*ENGINEERING SERVICE



For new or old buildings, every Holophane installation is custom built, after a survey by Holophane lighting engineers. Plans, specifications and costs are submitted in advance, entirely without obligation to the prospective client. This service is available anywhere in the United States.

** An outstanding example of the advantages of Holophane engineering consultation is the In-Bilt lighting of the new Municipal Auditorium in St. Louis.*



Illumination Service Since 1898

HOLOPHANE COMPANY, Inc.

342 Madison Avenue, New York

TORONTO, CANADA

Works: NEWARK, OHIO

